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THE NATURE CONSERVANCY NEWS

August/September 1986

PUBLIC LANDS

Bob Moseley

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THE NATURE CONSERVANCY NEWS

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COVER: Muleshoe Ranch, Arizona. This photo is one of a selection by Jack W. Dykinga that will be featured in a 1987 calendar published by the Arizona Chapter. Watch for details in the next *News*.

The Nature Conservancy is a national conservation organization committed to the preservation of natural diversity by protecting lands and waters supporting the best examples of all elements of our natural world.

To date the Conservancy and its members have been responsible for the preservation of 2,611,690 acres of forests, marshes, prairies, mountains, deserts, and islands: home to rare and endangered species of wildlife and plants. Since the acquisition of the first preserve in 1954, the Conservancy has completed 4,148 projects. Approximately 60% of all preserves are retained by the Conservancy and managed by staff and volunteer land stewards.

A membership organization, the Conservancy was incorporated in 1951 in the District of Columbia for scientific and educational purposes. The Nature Conservancy is a nonprofit, tax-exempt corporation under Section 501(c)3 of the Internal Revenue Code and is a publicly supported organization as defined in Sections 170(b)(1)(vi) and 509(a). All contributions are tax-deductible.

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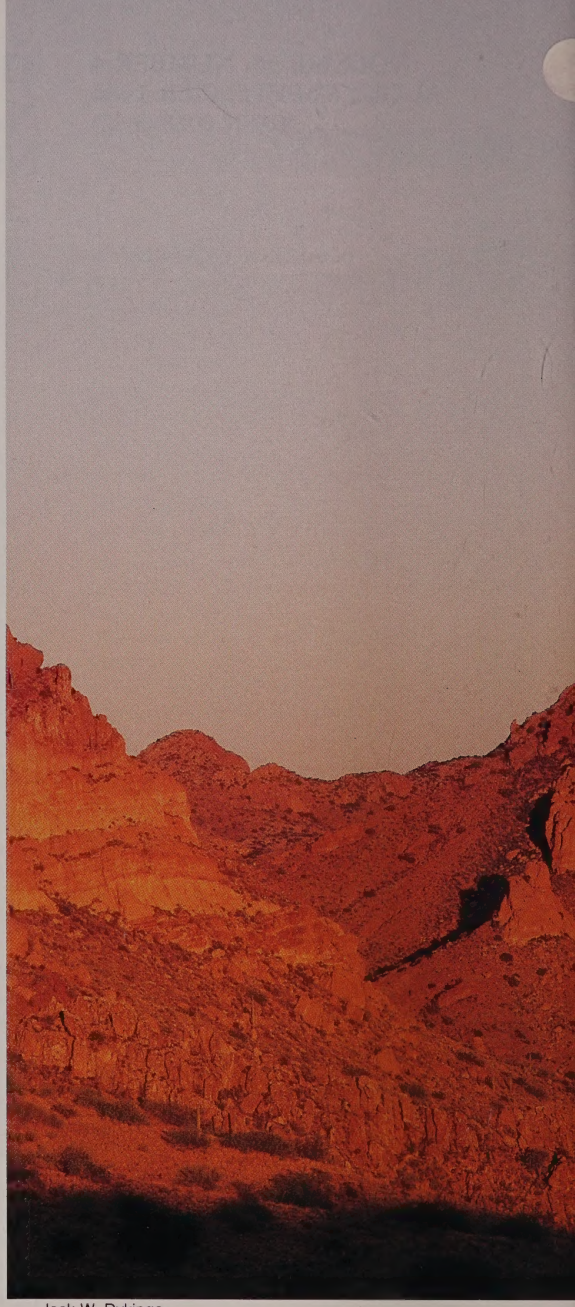
Private Action for Public Lands

by G. Jon Roush



Jack W. Dykinga

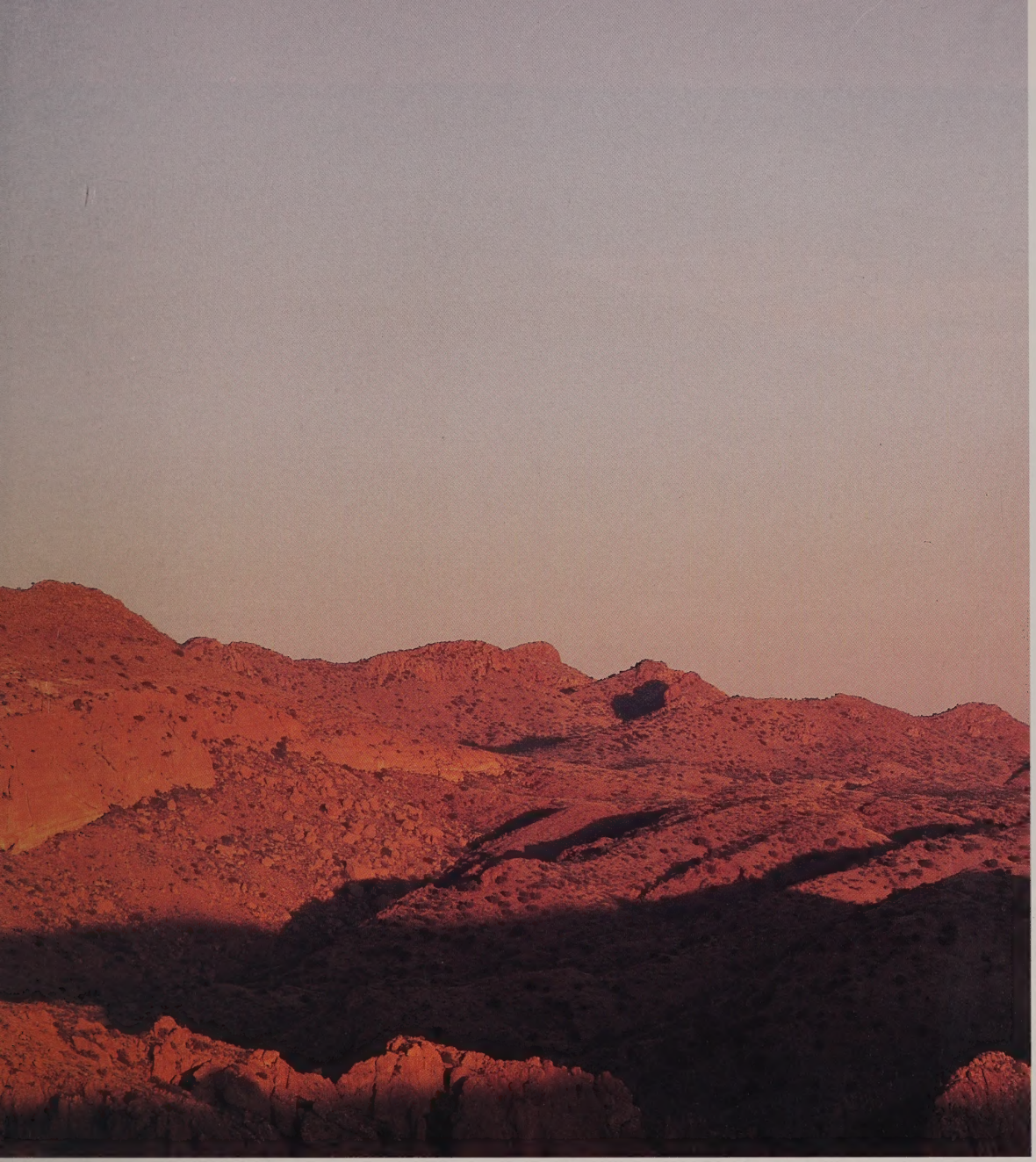
WHO IS the largest landowner in the United States? The United States. As a taxpayer, you are part owner of some 700 million acres. That's roughly 1.1 million square miles. Put it all in one place, and it could hold Italy, France, Belgium, Denmark, both Germanies, and the Netherlands—and still not be half filled. Make it a square, with more than a thousand miles on each side, and it equals one-third of our country. However you measure it, it's mostly beautiful, often wild, and the only home for hundreds of very rare species.

Take the dirt road from Monida (population 9), Montana, toward Yellowstone National Park. For the next 40 miles, riding the shoulders of the Continental Divide, you will traverse the Centennial Valley. There you will pass Red Rock Lakes. This singular area is the source of the Missouri River, part of a national wildlife refuge, and breeding ground for most of America's trumpeter swans. Officially a threatened species, trumpeter swans have many friends. Biologists, refuge managers, government lawyers, and watchful citizens—all are dedicated to keeping these elegant birds alive.

Next to the refuge are 2,000 acres of sand, sagebrush, and skimpy grasses—scrub land with no apparent purpose except to help hold the planet together. It is easy to miss. In the grand scale of the Centennial Valley, 2,000 acres is a trifle. Yet this one patch of desert supports four rare plant species, and it marks the extreme edge of the range of the Great Basin pocket mouse, the spotted skunk, and the pygmy rabbit. As a group, the plants constitute a rare type of "sand prairie" community, which is like saying pigments, oil, and canvas constitute a Rembrandt.

While the trumpeter swans are justly defended, the sand prairie community enjoys no official protection. It should. Protecting rare communities is cost-effective conservation. Save a rare community, and you have probably saved more than one rare species. Besides, a population of a species in a rare community will often carry more variation in its own genes than a similar population in a more conventional neighborhood. Such genetic variation is an important source of adaptation and species survival.

So far the Centennial sand prairie has survived through benign neglect. Only a few ranchers and cowboys share the austere, magnificent solitude of



As part owner of Muleshoe Ranch, which provides important habitat for many species such as bighorn sheep and several raptors, the Conservancy will propose that BLM and Forest Service lands within Muleshoe be set aside as special management areas for wildlife.

the place. Ranchers themselves own about a third of the area. The rest, in an interlocking mosaic, is public land. Decisions of public agencies will ultimately determine the sand prairie's odds for survival.

SUCH PATCHWORK patterns of management are common in the western states, where the federal government owns 60 percent of the land. Almost three-fourths of that huge area is managed by the Department of the Interior. Interior is like a holding company with five separate and sometimes divergent subsidiaries. By far the largest is the Bureau of Land Management (BLM), which manages 60 percent of all federal lands. It guards the land that nobody wanted—whatever was shunned by the homesteaders, miners, and promoters who divvied up the West in the 19th and 20th centuries. As you drive through the West, whenever the road stretches straight to the horizon and you wonder

Bob Moseley

Nestled in Idaho's Nez Perce National Forest, Fish Lake (above) has been proposed for designation as a research natural area. The unstable ash slopes at Malm Gulch—also one of Idaho's proposed research natural areas—support some one dozen endemic plant species, including Salmon crazyweed (opposite page).

what God saw in sagebrush, you are probably passing BLM land.

But take another look. The BLM domain is home for roughly 300 rare species and communities, not including invertebrates. One of those communities, for example, is the Centennial sand prairie. Only recently has the public begun to appreciate the importance of such genetic resources. Once Interior's stepchild, BLM is now emerging as the federal agency most in charge of our ecological future.

Still, BLM has no monopoly. The Interior Department houses four other major land management agencies: the National Park Service, the Fish and Wildlife Service, the Bureau of Reclamation, and the Bureau of Indian Affairs. Each has its own goals, policies, history, and ethic. Together they control the destiny of another 200 globally rare species and communities.

Finally, another giant agency sits completely outside the Interior conglomerate. The U.S. Forest Service, part of the Department of Agriculture, supervises about 190 million acres, in all but six states of the Union. The agency rides herd on 155 national forests, 19 national grasslands, and assorted special land areas. It is therefore the last hope for about 200 rare species and communities.

Of course, public lands hold other attractions besides rare creatures. Coal and oil, grazing lands and timber, and precious water—these are the ornaments that beautify public lands in the eyes of many beholders. Are public land agencies lobbied by special interest groups? Is the prom queen asked to dance?

Caught between preservationists, developers, miners, ranchers, and loggers, federal officials must sometimes dream of less contentious careers, like refereeing dog fights. But with good planning, they often can have it both ways—protecting specific natural communities while permitting resource development elsewhere. Both Interior and the Forest Service have several mechanisms for doing so. Any

Bob Moseley

federal agency can establish research natural areas (RNAs), which protect exemplary ecosystems for scientific research. And any agency can maintain a "sensitive species list" to steer its land use planning. What's more, BLM can designate areas of critical environmental concern (ACECs) for any environmental cause. To guide those decisions, the agencies have their own staffs of scientists, whose years of research have revealed much about the location and condition of rare species and communities.

WITH GOOD LAWS and staffs, the public agencies already seem equipped to care for rare species and communities. Then why should a private organization like The Nature Conservancy intrude?

For three reasons. First, a million square miles is a lot of land. It offers plenty of canyons, grasslands, mountain tops, and forests in which small, rare bits of nature can go unnoticed. Federal agencies have relatively few researchers, and budget cutters recently have reduced their numbers even more. The Conservancy can provide staff and volunteers to fill in the many gaps.

Second, different agencies speak different languages. They ask different questions and answer different constituencies. Their estimates of the rarity of species vary, as do their classifications of natural communities. They are often unaware of data held by other agencies. The Conservancy can help establish a nationwide network for exchanging biological information among agencies.

Third, public lands support about 700 rare species and communities. Most of them, like the Centennial sand prairie, have yet to receive any special protection. Since federal laws require that agencies be fair to all legitimate users of public lands, officials do not lightly withdraw any area from exploitation. Often, reliable information can tip the balance one way or the other. As the Conservancy develops such information, it has a responsibility to share it with public agencies.

Making it all possible are state natural heritage programs. Through them, 41 state governments use The Nature Conservancy's unique approach to biological inventorying. Each heritage program tracks the whereabouts and welfare of "elements of diversity"—noteworthy plants, animals, and biotic communities—wherever they occur within its state's borders (see the November/December 1985 *News*).

Heritage programs have a most practical purpose: to set priorities for conservation. With heritage data, Conservancy scientists can rank all elements according to their rarity and vulnerability. In states without full-scale heritage programs, Conservancy scientists still develop "diversity scorecards," which use the best available information for the same purpose. These nets of information fall on all land, private and public.

To get its data out to state and federal agencies, the Conservancy has established a Public Lands Protection Program. Where we worked in the past to help agencies acquire critical habitat, we are now also helping them identify and manage it. Using heritage data, public lands protection planners recommend specific sites for designation as RNAs or ACECs. They help coordinate field work, gather and prepare documentation, and develop management plans for such areas.

BOTH BLM and the Forest Service are currently occupied with fateful long-term planning. For that reason, the Conservancy has focused on those two agencies. We are beginning to see results. Since the beginning of the Public Lands Protection Program in 1984, heritage information and scorecard rankings have helped create some 40 RNAs and ACECs, and Forest Service and BLM officials are considering many more.

And other areas, although denied full RNA status, have been labeled "special interest areas." As such, their protection is relatively weak, but they might later be upgraded when scientists collect more information. Soon, as the Forest Service and BLM complete their plans, the Conservancy will turn more of its attention to other public lands, including the millions of acres owned by states.

The sooner the better. You and I are part owners of some of the country's most precious natural lands. But we are far outnumbered by those multitudes of co-owners who are still unborn. They may need that sand prairie community.

G. Jon Roush is chairman of the Conservancy's Board of Governors.

From the Field: An Interview with Curt Soper

conducted by Fayette Krause

Curt Soper is coordinator of The Nature Conservancy's Public Lands Protection Program in the Western Region as well as director of preserve selection and design. Fayette Krause is the land steward for the Conservancy's Washington Field Office.

Q. What is the Public Lands Protection Program and when did it begin?
A. First, to prevent chronic hoarseness, we refer to the program as the PLPP. It's the Conservancy's vehicle for addressing issues related to the identification and management of key natural areas occurring on public lands. Protection of these sites has implicitly been part of our mission for nearly a decade, but it only became a separate, full-fledged Conservancy program in 1984.

Q. What was special about 1984?
A. In 1976, Congress directed both the U.S. Forest Service (USFS) and the Bureau of Land Management (BLM) to complete comprehensive land-use plans for all their holdings, with the process peaking in 1986-87. Early on, we realized that this presented a tremendous opportunity to cooperate with the country's two largest federal land management agencies in protecting threatened and endangered species and natural systems. Our assessment was correct, but our follow-up was uneven. So, by the early 1980s, we knew we needed to be better organized.

We began by analyzing the data on all species and plant communities of concern to determine how many were on public lands. The stakes were greater than we expected: fully 50 percent of all our "target elements" exist on publicly owned property. Clearly, our goal of protecting biological diversity could only be successful if we could work with public agencies. So, in 1984, we created the PLPP and planned for an initial three-year "push" to coincide with the peak years of the USFS and BLM planning cycles. Our goal is to participate in every USFS forest plan and every BLM resource area plan, by providing information—through state natural heritage programs—that no other organization has compiled in any systematic fashion.

Q. Were there precedents for this national program within the Conservancy's state programs?
A. The Conservancy has traditionally cooperated with federal agencies—especially in Oregon and Washington. For years, we have participated in the Research Natural Area Committee that meets periodically in Portland and brings together staff from all federal land management agencies in the Pacific Northwest. Committee members discuss candidate research natural areas or management problems on existing designated natural areas. This preceded our national program and provided something of a model.

Q. Aren't other conservation organizations, with their emphasis on expanding national parks, wilderness areas, and wildlife refuges, already focusing on this issue?
A. Not exactly. We have a much different purpose. The Conservancy's interests are threatened and endangered species and high quality examples of imperiled natural community types. Sometimes these are found on previously protected areas, but often they aren't. Our concerns tend to be the "back 40 acres" that no one knows about. Another difference is that other groups rarely seek the kind of designations we do—an RNA or an ACEC. Finally, we base our designation recommendations solely on biological criteria, not on recreation or scenic values.

Q. You've mentioned some federal land protection categories—RNA and ACEC. What do these acronyms mean and what do they accomplish?
A. Although originally associated with the Forest Service, a research natural area (RNA) is the only

Jimmy Kagan

Jimmy Kagan

The Oregon Heritage Program's botanical data helped BLM in its decision to designate Leslie Gulch (top) as an area of critical environmental concern (ACEC). The rocky canyon protects a population of globally endangered Montzelia packardiae *(above).*

designation that may be used by all federal land management agencies—usually subject to approval from regional RNA committees. RNAs are "baseline" sites used in research and education; they also protect genetic diversity. There are national guidelines that apply to all RNAs, and this category is normally the most restrictive designation.

An area of critical environmental concern (ACEC) is unique to the BLM. This designation covers land where important natural or cultural systems are being protected, so its potential range is broader than that of an RNA.

Two other categories also are used: special interest area (SIA) by the Forest Service and outstanding natural area (ONA) by the BLM. They're quite similar—both protect areas' special natural values while permitting recreational use of the properties. In this, they differ markedly from the RNA and ACEC.

Q. If these categories are already in place, why is the Conservancy needed?

A. They are in place but aren't being fully used to protect uncommon natural lands. Our role has been to recommend specific sites for designation by using the best scientific information available. The agencies are operating under a Congressional direc-

tive to identify areas on their holdings that are worthy of such protection and to involve the public, through their planning processes, in selecting appropriate sites. We are responding to this invitation.

Q. How does the Conservancy know what to recommend?
A. Earlier I mentioned the state heritage programs. The Conservancy initiated this biological inventory approach to natural area identification and protection in the mid-1970s. Today, 41 states have heritage programs. In some states, heritage staff members have been gathering information and refining protection priorities for a decade or more, so there's a substantial bank of material we can draw on. In states with a mature program, we can readily retrieve data related to public lands and send it to the appropriate agency. In many cases, such information would be unavailable through any other source.

Marc DesMeules

Marc DesMeules

Both the cobblestone tiger beetle (a candidate for federal listing) and the ram's head lady's slipper (threatened in Vermont) may benefit from the Conservancy's partnership with state agencies.

Q. Where and how do public lands protection planners operate?
A. We have a network of ten state PLPP planners and four regional coordinators. The state representatives are located exclusively in the West because that's where most public lands occur. In Utah, for instance, with 61 percent of the land under federal ownership, we simply have to work with government agencies if we want to have any impact on preserving biological diversity in that state.

The planners work within an agency's management framework. Each agency has a slightly different approach to designation, so our planners must be familiar with different sets of regulations. Typically, PLPP planners write responses to planning documents, get to know agency decision-makers, and organize site visits on public lands to better explain Conservancy concerns to agency personnel. Our planners are the link between heritage program data and agency staff. In addition to working with the USFS and the BLM, they assist the National Park Service, the U.S. Fish and Wildlife Service, the Department of Defense, and similar landowning agencies on the state level.

Q. What about state agencies? Is the PLPP helping them as well?
A. We're working in many states all across the country. A good example is Vermont, where we're assisting two state agencies in protecting uncommon natural lands on their holdings. The Conservancy has been helping the Vermont Department of Fish and Wildlife and the Department of Forests, Parks, and Recreation to acquire property for a number of years. The partnership has been so good that in 1985—when Conservancy and agency staffs saw the need to correlate heritage site data with state land ownership patterns—the Department of Fish and Wildlife offered to supply an intern to plot the boundaries of land managed by both agencies on heritage maps.

Meanwhile, in addition to pinpointing areas in need of protection, the Conservancy will provide reports on the descriptions and status of species and natural communities and will make management recommendations. The timing is excellent since the Department of Forests, Parks, and Recreation is just completing a planning process for all its lands. The Vermont Natural Heritage Program has located some 30 critical sites on forests and parkland, and the department has indicated it will incorporate our management recommendations in its plans for those units. The Fish and Wildlife Department has a like number of sites. So, by cooperating with these two Vermont state agencies, we will help protect about 60 areas harboring more than 100 significant natural elements.

Geoff Pampush

Members of the board: these burrowing owls—and many other animals—call Oregon's Boardman Bombing Range home. In 1980, the Department of Defense designated 5,000 acres of Boardman as a research natural area.

Q. Are there other success stories you find especially encouraging?

A. Many, but I'll limit myself. In Georgia's Chattahoochee National Forest, a botanist discovered an orchid federally listed as endangered. But, fearing plant poachers, he originally wouldn't disclose the plant's location. Conservancy staff later convinced him that protection *was* possible if the U.S. Forest Service were fully informed. Upon notification, the Service promptly withdrew the land from any type of use and began monitoring the orchid population. That was lucky because, last April, a USFS biologist checked the site and found an off-road vehicle had squirreled through the area. The agency immediately closed all access to the property. Obviously, responsibilities don't end with designation; they really just begin.

And in many areas, we're just beginning to have an effect. In the Forest Service's Southeast Region, no RNAs have been designated since 1978. The RNA committee itself had become inactive. Owing to the interest of Conservancy and agency staff, the committee is again functioning and has set a goal of designating six RNAs during 1986. I'm very proud that we played a part in an agency's long-term commitment to a rare orchid and in the rededication of an RNA committee.

Q. In some cases, isn't it true that the Conservancy not only recommends sites but also is contracted to research potential candidates for designation?

A. Yes. Federal agencies face a monumental task in developing their land-use plans. The Conservancy, on the other hand, has the luxury of concentrating its efforts on small pieces of the pie.

In the course of our work with various agencies, many officials have discovered that we can be of help. In 1985, for instance, the Forest Service's Eastern Region pledged to fund half of a $200,000 project in which the Conservancy will assist in producing RNA establishment records and ecological management recommendations and also perform inventory work for more than 100 candidate RNAs. The cost to us is about $1,000 per RNA—a very inexpensive way to protect thousands of acres

David Genter

Author Curt Soper (center), along with a botanist and a representative of the Montana Department of Fish, Wildlife, and Parks, surveys a section of endangered palouse grassland for possible designation as a key natural area.

supporting 100 or more threatened and endangered species or rare natural community assemblages.

Q. The PLPP sounds timely and important but less glamorous than most Conservancy projects. In the end, you won't own any new preserves. Does this make it difficult to raise funds for the program?

A. It's a concern. The way the PLPP works is definitely more subtle than buying Santa Cruz Island or habitat for rare Hawaiian birds. We're producing very concrete, measurable results, but they aren't the usual Conservancy product.

Long-term funding prospects for the program are uncertain. We realized this initially yet were willing to commit special discretionary money to start the program because we were convinced of its necessity. This fund is now nearly depleted. Another financial source has been contracts with federal agencies—a kind of fee for service arrangement—but budget cuts make this unpredictable. Some of the Conservancy's state offices in the West have begun fund raising locally for public lands protection with mixed results. It will be a challenge to raise the money. But the pay-off is so unquestionable that we must succeed. Whenever I worry about funding, I remember that 50 percent of all imperiled plants, animals, and communities are on public lands. That's an effective prod.

Q. How have the suggestions of your PLPP planners been received by agencies?

A. Very well. To cite a recent example, in Washington and Oregon, we recommended a number of sites to the BLM for consideration as RNAs or ACECs. After evaluation, the agency designated all of them. We provide hard data, which can be readily verified, and we are confident that recommendations based on the data can endure scrutiny.

Now, I've focused on what we can do for agency personnel, but not on what they can do for us. Some agency employees have supplied biological information to heritage programs. Others have shared their knowledge of fire management or the use of prescribed burning on grassland preserves. In addition, on Conservancy lands where visitor pressure is an issue, we certainly can learn from agencies administering national and state parks—they were dealing with public visitation long before the Conservancy was born. The relationship between the Conservancy and governmental agencies is definitely a two-way street that benefits all.

Q. How is the program progressing, and where is it likely to expand?

A. With so many Forest Service and BLM planning documents nearing completion this year, circumstances require that we focus on those agencies. That's where we've seen the most progress and are likely to see more in the near future. Soon, we'll expand our contacts with federal agencies, especially with the Department of Defense, which is a major nationwide landowner.

Then there are the individual states. In some, we are already working well, but much more needs to be done. Alaska, for example, contains 85 million acres of state-held land, with another 20 million acres to be conveyed to the state over the next ten years. All told, this acreage takes in one-third of Alaska—an area roughly equivalent in size to California. Equally telling are heritage program figures from the 13 northeastern states: more than 500 sites of ecological importance have been identified on public land. Of these, more than 400 are state or locally owned. We've barely scratched the surface. Working with state government agencies becomes even more crucial when you realize that funding for natural area preservation is likely to expand faster on the state than on the federal level.

We will continue to build our own system of Conservancy preserves. That's a given. But one of the greatest opportunities for a huge leap forward in protecting biological diversity in the United States lies in working with local, state, and federal agencies. It will be an exciting and rewarding venture.

Public Lands and the Conservancy: Four Case Studies

BOTANIZING

by Roger Jones
Assistant Director for Site Planning, South Carolina

DURING THE LATE 1970s, Dr. Richard Porcher, a botany professor at The Citadel, spent untold hours roaming the swamps, bogs, and flatwoods of the Francis Marion National Forest. Though situated less than an hour from several colleges in Charleston, South Carolina, the forest had never undergone a major rare plant inventory.

Porcher's battles with summer heat, ticks, chiggers, and mosquitoes paid off: after almost ten years of gathering data, he received a small grant from the U.S. Forest Service to produce a written document on his findings. Two notebooks packed with maps and site descriptions are testimony to his fine efforts.

By 1985, some five years after Dr. Porcher had completed his report, the opportunity arose to take advantage of his research. The Forest Service was seeking public comments for its land and resource management plan required by the National Forest Land and Resources Management Act. At the same time, The Nature Conservancy's Public Lands Protection Program was in full swing—ready to be of help to the Forest Service in its planning process.

The South Carolina Heritage Trust—the first such program devised by the Conservancy 11 years ago—combined its own site information with Porcher's document. With this data in hand, the Conservancy was able to recommend protection for a number of properties in both the Francis Marion and Sumter National Forests. Our suggestions were well received. Donald Eng, Forest Service supervisor for South Carolina, designated a total of 47 special interest areas covering 1,147 acres in the two national forests. The roster of what is actually being safeguarded includes more than 90 different rare plants and natural communities, seven globally endangered species, and some one dozen imperiled bays and bogs.

In addition, the Conservancy has proposed that a 500-acre limesink complex near Honey Hill in the Francis Marion National Forest be designated as a research natural area (RNA). The Honey Hill Region is underlain by at least 20 limestone sinks and sinkholes. Limestone maintains almost neutral pH soil conditions at the sinks. When combined with the site's constant environmental conditions, the limestone soils give rise to a number of botanical rarities. Along with a large population of pondberry (*Lindera mellisifolia*), the complex supports loose water-milfoil (*Myriophyllum laxum*) and pondspice (*Litsea aestivalis*). The selection of Honey Hill sinks as an RNA would spell protection for almost one-third of the globally threatened pondberry's known habitat.

Since designation of the 47 special interest areas, the Conservancy's South Carolina Office, the

Jeff Lepore

Scattered clusters of insectivorous hunter's horn pitcher plants dot the bogs and wet savannahs of the Francis Marion National Forest. Several pitcher plant bogs within the forest are protected as special interest areas (SIAs).

Joel Tuhy

state's Wildlife and Marine Resources Department, and the U.S. Forest Service have signed a memorandum of understanding to work jointly on identifying, protecting, and managing uncommon habitats on national forest lands. Dr. Porcher's botanizing was the first step towards an exemplary partnership between public and private conservation interests.

GILBERT BADLANDS

by Joel Tuhy
Utah Public Lands Coordinator

BACK IN THE Cretaceous Period, when the dinosaurs were on their last legs (and wings and fins), a vast inland sea covered what was to become southeastern Utah. Sediments carried by streams from adjacent highlands down to this sea were deposited in layers thousands of feet deep. Now, more than 65 million years later, the finer grained sediments form a series of shale badlands that lie almost a mile above sea level on the Colorado Plateau. Although the badlands are in the middle of a nearly barren desert, their eroded shapes still look like great gray waves of a choppy sea.

The shale is a harsh environment for plant life—only certain species specially adapted to the salty soils can survive here. One, mat saltbush (*Atriplex corrugata*), grows in small clumps seldom more than a few inches high and provides ample shade—if you're no larger than an ant.

In southeastern Utah and adjacent states, shale is abundant, and it gave rise to expansive stretches of mat saltbush. But human settlement, sparse as it still is in this region, brought changes to the land. Most of the mat saltbush has been grazed, as it's good winter forage for livestock in areas where little else grows. Inevitable stowaways also accompanied settlement: exotic plants like cheatgrass, Russian thistle, and tamarisk that now thrive in much of the West—to the detriment of native plants. In addition, the shale hills are preferred habitat for another flourishing species, off-road-vehicle riders.

Today, few areas of shale and mat saltbush exist in pre-settlement condition. We learned about one such site four years ago from Andy Godfrey, a geomorphologist who delights in watching land move

Joel Tuhy

A nearly barren caricature of the inland sea that once flowed here, the Gilbert Badlands (opposite page) support only a handful of specially adapted species. One such survivor is mat saltbush, a scruffy, low-growing plant that tolerates the badlands' harsh environment and salty soil.

and erode. The area he described is named in honor of G.K. Gilbert, a pioneer in the science of geomorphology, who traveled through the region in the late 1800s.

On a June day in 1984, I struck out from Hanksville—a remote desert oasis once frequented by Butch Cassidy's outlaw gang—to see the Gilbert Badlands myself. I followed Andy's directions over a good road, a poorer road, and finally over very little road to the edge of the site. The starkly eroded shale was trackless, except for two sets of coyote prints, and the mat saltbush grew unhampered by non-native weeds. Viewed closely, the Badlands were what I'd imagine the moon's surface to look like.

The Gilbert Badlands are administered by the Bureau of Land Management (BLM). In 1984, the Conservancy and BLM began a partnership to preserve certain natural areas on public lands in Utah. We put this partnership to work on seeking protection for the Badlands. As the Conservancy's public lands coordinator for Utah, I proposed that BLM recognize the site's ecological values by designating it as a 3,700-acre research natural area (RNA).

Andy Godfrey and I met with local BLM people a little more than a year ago to talk over my proposal. Glenn Patterson, the manager for BLM's Henry Mountain Resource Area, seemed cautiously favorable but still had to weigh RNA designation against other possible land uses.

Then, last October, I accompanied Glenn and two other BLM staff members to the Badlands. We looked at its natural and scientific merits and discussed other resource uses in the area that could conflict with an RNA. We also considered the potential problems in protecting the integrity of this remote site if it were to become a research natural area.

Glenn saw the benefits of safeguarding the Gilbert Badlands via RNA designation. To date, public opinion also has been favorable. Through protection as an RNA, the Gilbert Badlands will continue to sustain its pure mat saltbush and to offer a site where scientists like Andy can study a remnant of the earth in its natural, unaltered state.

JOINING FORCES

by Carol S. Sutherland
Missouri Field Office

FROM THE PRAIRIES of southwest Missouri to the swamps of the Bootheel, from the ridges and hollows of the Ozark hills to the glacier-leveled north, Missouri is considered a biological crossroads. Here, symbolized by St. Louis's Gateway Arch, east meets west and north meets south. Thanks to this merging, the state harbors a diversity of species and natural communities uncommon in the Midwest.

Since its founding in 1958, the Conservancy's Missouri Chapter has worked closely with federal

and state agencies in protecting ecologically significant lands throughout the state. Many of these areas have been identified by the Missouri Natural Heritage Inventory, which was initiated in 1980. Using methodologies established by The Nature Conservancy, the inventory (like its counterparts in other states), develops a "scorecard"—a priority list of plants, animals, and natural communities most needing protection. The Missouri Chapter works cooperatively with various government agencies and private landowners to select the best means of preserving these species and communities.

Some of the data used in the Missouri Natural Heritage Inventory's ranking process come from field work conducted by chapter interns or Missouri Department of Conservation staff. Eventually, these inventories, which are being carried out on a county-by-county basis, will encompass the entire state. The Missouri Chapter is partially funding, in cooperation with the Department of Conservation, one such effort in Lincoln, Pike, Warren, and St. Charles Counties. And, in a joint agreement with the U.S. Forest Service, the Department of Conservation—using heritage inventory methods—will search the Mark Twain National Forest for additions to the Service's list of proposed research natural areas.

Sherry Morgan

One of spring's early messengers, pondberry (Lindera melissifolium) *stages a brief, bright show of yellow against a brown March backdrop.*

In 1970, the Department of Conservation began selecting its best lands and designating them as state natural areas—terrestrial, aquatic, or geological sites that have retained or recovered their presettlement conditions. Then, in 1977, the Department of Natural Resources joined forces with the Department of Conservation to create the interagency, statewide Missouri Natural Areas System. During the past 16 years, the system's designation program has expanded to include 137 sites encompassing about 19,200 acres. These lands are owned by a variety of organizations and agencies, from the Conservancy to the Departments of Conservation and Natural Resources, from the Missouri Prairie Foundation to the University of Missouri. Several recent Conservancy projects, namely Gamagrass Meadows, the Marmaton River Bottoms Wet Prairie Preserve, and the Nancy B. Altvater Pondberry Preserve (now part of the Sand Ponds State Forest) are currently being evaluated for inclusion in the Missouri Natural Areas System.

The Altvater Pondberry Preserve harbors one of the world's rarest shrubs, the unprepossessing pondberry (*Lindera melissifolium*). Restricted to a handful of locations throughout the southeastern U.S., in Missouri the pondberry is limited to a sandy, swampy area near the Arkansas border. Not only is the pondberry an imperiled plant, but also the community in which it grows—wet bottomland sand forest—is increasingly threatened by drainage and agricultural development. The cooperative efforts of the Conservancy's Missouri Chapter and the Department of Conservation are ensuring the survival of the pondberry and its forest habitat.

SWAMP LAKE

by Tom Wolf
Protection Planner, Wyoming

WHEREVER there is marl, there's a limestone source. And two sure-fire indicators of rare plants in Wyoming are limestone and warm springs.

These were the lures that drew us to Swamp Lake, a promising wetlands complex in the Shoshone National Forest on the eastern rim of Yellowstone National Park in northwest Wyoming. Last June, botanists from the Bureau of Land Management (BLM) and the U.S. Forest Service joined Conservancy botanists for an inventory of the site.

Preliminary checks with BLM geologic maps showed that some 10,000 years ago, a huge glacier had ground its way through the Clark's Fork Valley, leaving behind a much larger body of water than Swamp Lake. In addition, aerial photos and infra-

Erwin Evert

A blue jewel set in the Clark's Fork Valley, Swamp Lake harbors an abundance of rare plant species that are refugees of the last ice age.

red satellite images provided by our Forest Service companions showed that the shallower portions of the lake's basin were filled with marl and peat, interspersed with alluvium ripped from Cathedral Cliffs—the great granite monadnock towering 2,000 feet above Swamp Lake.

The lake's edges were warm. With great expectations, we began wading around in the muck and mire. Whoops and hollers from Conservancy contract botanist, Erwin Evert, brought us all splashing out of the shallows to join him in the mixed sedge-shrub fen that grades up into a spruce swamp forest toward the cliffs. Immersed to his knees in one of the warm springs that fingers into the lake's margins, Evert was pointing to a tiny sedge—*Carex microglochin*—found nowhere else in the lower 48 states.

Spurred by his find, the rest of us started sloshing about the fen. Again and again, someone surfaced with a new state record. We were putting the Shoshone National Forest on the botanical map.

So many rare and unusual boreal plant species could mean only one thing: Swamp Lake is a refugium for species that were much more continuously distributed in the continental U.S. during the last ice age. In a little over a square mile's space, we found many different plant species that have persisted here for about 10,000 years.

Exhausted after a full day of non-stop collecting, we finally stopped to get our eyes out of the muck (and the muck out of our eyes). As the evening's chill enveloped us, we suddenly felt we weren't alone. Obvious to anyone but botanists, fresh grizzly bear droppings scattered throughout the rare sedges and red bearberry glistened in the slanting rays of the evening sun.

One of the Forest Service people said, "This time of year, Griz depends on succulent plants like sedges for about 90 percent of his diet. But don't worry, he feeds mostly at night."

Working on behalf of the Conservancy, Erwin Evert returned to the site to document our discoveries. I took his report to Shoshone Forest Supervisor Steve Mealey, just then in the process of writing his "forest plan." A prominent bear biologist, Mealey saw the importance of our findings, and he explained how protecting a grizzly bear feeding site would fit into his plans for managing the entire forest as Griz habitat.

After a complicated series of negotiations with local loggers and ranchers, the Forest Service's regional office nominated the Cathedral Cliffs Wetlands Complex as a "special interest area for botanical concerns." Along with the grizzly, it will be protected as part of a 50-year forest plan. Or until the next ice age, whichever comes first.

Sue Crispin

Designation: A Forest Service Perspective

by Larry Henson, Regional Forester
with DeVon Nelson, Regional Ecologist

"WHY NOT?" I kept asking. As regional forester for what the U.S. Forest Service calls its Eastern Region—which actually encompasses 20 states running from Missouri to Maine—I had been listening to reasons why all the proposed research natural areas (RNAs) on a particular national forest could not be established. After all, the areas' ecological values were well substantiated, and people in the vicinity of the forest were anxious to see the sites so designated. Moreover, arguments for the timber and for possible mining on the proposed areas seemed trivial, because the RNAs would cover less than one percent of the forest. The outcome? The forest supervisor included the RNAs in his forest plan.

☆ ☆ ☆

I had not always fought so hard for RNAs. They aren't new to the Forest Service—they've been around for several decades. "Around" pretty well describes the situation. To most rangers and forest supervisors, they were the small blocks of land within the National Forest System set aside for use by staff of the Service's research branch. Most Forest Service people knew that RNAs were some of the least disturbed areas and that many protected uncommon animal and plant communities.

The forest plans called for by the National Forest Land and Resources Management Act helped change our thinking about RNAs. We asked the public how it would like to see the national forests managed. Among the answers, we heard a resounding cry to recognize and protect the forests' unique

Sue Crispin

Nordhouse Dunes (opposite page), a proposed research natural area in Michigan's Huron-Manistee National Forest, boasts one of the world's largest populations of pitcher's thistle (above), a candidate for federal protection.

places. The information we collected for the forest planning process showed us we could provide the protection these special places deserved as well as meet most of the public's other demands. RNAs seemed to be the most logical and accepted designation to consider.

RNAs ARE SET aside on federal lands to protect rare and representative plant and animal habitats. They contain examples of significant and, in some cases, diminishing ecosystems; some harbor threatened and endangered species. Officially, they're to be used for research, study, education, and monitoring. These were their original purposes. These purposes persist, but protection itself is now a recognized objective. Furthermore, the role of RNAs in monitoring the implementation of our forest plans may become their most valuable function.

In creating RNAs, the Forest Service's aim was to have a national network of the nations' natural vegetation types. We have emphasized Society of American Foresters (SAF) forest cover types as the principal criterion for these examples. For many years, we sent "gap lists" to staff people on national forests asking them to search for SAF communities that had not yet been protected in the national network. Emphasis on SAF types has let up a bit: now we ask that Kuchler vegetation types, habitat types, and any other locally significant communities be considered.

The word "research" in the name of RNAs probably accounts for much of their past neglect. These sites were lost between staff of the research branch—whose priorities have shifted away from the kinds of studies RNAs facilitated—and those of us in the national forest systems branch who managed lands for a traditional set of products and services that gave little attention to RNAs.

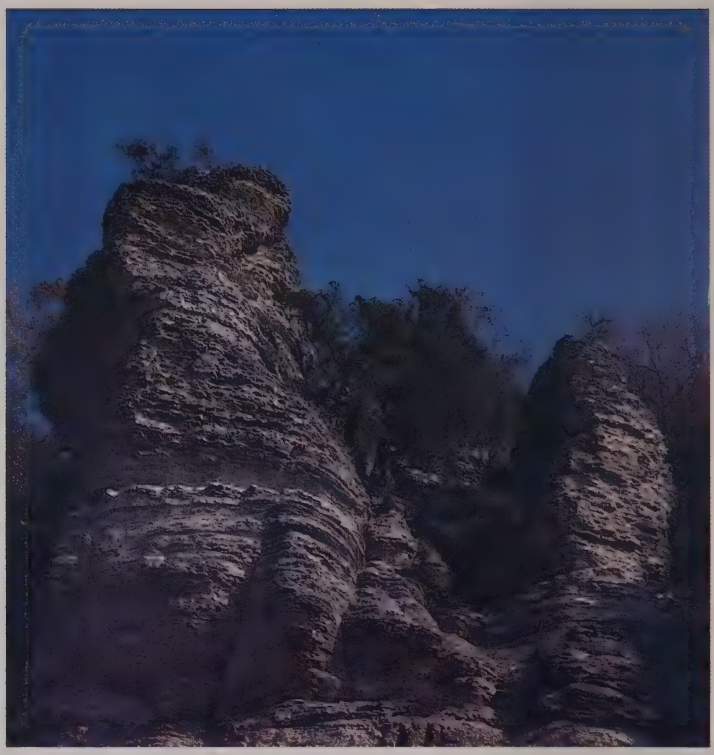
Ideally, RNAs encompass more than 300 acres, occupy entire watersheds, and are completely undisturbed. They contain no structures. These requirements had to be modified to accommodate our situation in the Eastern Region. Here, RNAs range from 50 acres in the Grand Island Area of Michigan's Hiawatha National Forest to 3,675 acres on the Ottawa National Forest, also in Michigan. Most forested RNAs were cut over in the last 100 years; some prairies were plowed. Several RNAs bear remnants of past occupants; few embrace an entire watershed.

Our region's record in RNA establishment has not been spectacular. Since the first one was created in 1931, on New Hampshire's White Mountain National Forest, we have designated only 11 more. The most recently approved RNA (1977) is the Grand Island Area. Nationwide, 150 RNAs have been established on Forest Service lands.

IN 1984, The Nature Conservancy had nominated some candidate sites in our region for designation as RNAs. But since nothing was happening, I received a call from John Humke, director of the Conservancy's Midwest Region. He expressed frustrations with our forest planning process and wanted to know how the Conservancy could participate. His call marked the beginning of a new working relationship.

The Nature Conservancy already had earned the respect of Forest Service people through its long-term contribution to our land acquisition programs. In several instances, the Conservancy has purchased key areas for us when we weren't able to move quickly enough. In others, it has made outright donations of land to the National Forest System.

Also, I later discovered that the Conservancy has contributed to the Forest Service's RNA



M.D. Hutchison

Two views of the proposed LaRue-Pine Hills research natural area in Shawnee National Forest, Illinois: imposing fluted limestone cliffs (right) and bullhead lily-covered waters of LaRue Swamp (below). More than 1,000 species of vascular plants thrive here.

M.D. Hutchison

program in less obvious ways. For several years, Conservancy-designed state natural heritage programs, which track the occurrence of rare species and natural communities, have kept us up-to-date on what we have on our RNAs. Furthermore, the Conservancy developed much of the technology used not only to identify natural areas but to manage them as well.

THE FOREST SERVICE has laid out a step-by-step process for locating and establishing RNAs, which begins with finding the candidate area and ends with the chief of the Forest Service signing off on the site's "establishment record." In recent months, the Conservancy has given us a hand in three critical steps of this process: first, by working with their contacts in state heritage programs, Conservancy staff members have identified possible RNAs. Most of the areas were listed in the national forest plans as candidate RNAs. Second, these candidates were then reviewed by eight to 15 people who know the vegetation and lands of the national forests. For this step, Conservancy people help us determine suitable members for these evaluation teams; some of them also participate as team members. Finally, data on plants, animals, and communities provided by Conservancy-created heritage programs are essential in preparing the RNA establishment records—the documents the chief must approve to make RNAs official.

Through its midwestern headquarters, the Conservancy has been very generous in helping finance the collection of this information. It has given us $100,000, which we must match, to pay heritage programs to gather biological data on the candidate RNAs. Thus, Conservancy funds let us obtain twice the information for our dollar.

The Nature Conservancy has assisted us in other ways as well. At our regional management team meeting, John Humke talked about the Conservancy and the importance of the Forest Service's RNA program. Conservancy people have met informally with Service employees on various national forests to visit and talk about candidate RNAs. Several Conservancy people also took part in our regional RNA committee meeting held in Washington, D.C., in 1985. And, last February, our Eastern Region and the Conservancy co-sponsored a highly successful two-day workshop on RNA establishment, which—among other things—enabled Conservancy, heritage program, and Forest Service staff working in the same states to become acquainted.

All told, the Conservancy's technical, financial, and moral support has paid off. We now have more than 130 candidate areas undergoing review for RNA designation.

THESE ARE the events that have catalyzed our RNA efforts. Why was the Conservancy able to "spark" these events? For one thing, Conservancy people did their homework. They studied our planning process and became acquainted with the Forest Service people doing it. They know the planning issues. I think they also have a feel for the pressure Service planners have been working under, which helped them appreciate—and I hope forget—some of the resistance they initially encountered.

In addition, the relationship we have with the Conservancy is a highly professional one. I've noted—and heard from staff on the national forests—that Conservancy people are pros. There are no confrontations, threats, or game playing. If there's something they don't know, they say so. When they say they'll do something, they do it. If they don't get the "whole pie," they listen to explanations and go from there. They keep their eye on quality as well as quantity. If an area nominated for RNA designation does not measure up, they recommend its deletion. It is easy to develop an excellent working relationship under these conditions.

The magic of mutual benefit also is a key ingredient to this partnership. In the Service's Eastern Region, national forests occupy less than four percent of the land. Although disturbed to varying degrees, these forests take in much of the East's remaining undeveloped areas—areas hosting uncommon habitats that have been lost elsewhere in the region. Part of The Nature Conservancy's mission is to preserve such sites. We in the Forest Service share that mission, but we often lack the information and skills to pursue it. Since the Conservancy has the knowledge and the expertise, it seems almost inevitable that we would join forces.

SOMETHING HAPPENED during our forest planning process. We listened to people, we read their comments. Moreover, we dissected, analyzed, categorized, and did our best to respond to their suggestions. Keeping track of public issues has become a new focus for us in the Forest Service.

We learned that our region's national forests occupy a distinct niche in the economies and psyches of the people. On the average, our constituents want recreation and wildlife; but timber and other resources also rank high on their lists. Our research showed that we can meet the demands for most resources, including those for RNAs.

Our forest plans provide the most efficient means we have ever had for managing our national forests. Integral to this management is the creation and protection of research natural areas—the special places for species and ecosystems that now are even more special, thanks to The Nature Conservancy.

ECOLOGY FORUM

No. 60
by Ken Wiley
Arizona Land Steward

MULESHOE: MODEL FOR MANAGEMENT

Roughly 20 miles from end to end and from five to nine miles wide, the historic Muleshoe Ranch Preserve in southeastern Arizona encompasses a range of southwestern ecosystems. Within this 54,810-acre expanse is a mosaic of desert grasslands and pine-oak woodlands—home to nesting peregrine falcons, gray, black, and zone-tailed hawks, and the rare northern beardless tyrannulet. Uncommon reptiles include the desert tortoise and the Gila monster. Its rimrock canyons support healthy populations of desert bighorn sheep and mountain lion. Black bear, javelina, and mule and white-tailed deer are found throughout the property.

What originally caught The Nature Conservancy's interest here, however, was water. The Muleshoe has a number of perennial streams, three of which are especially significant. In addition to the entire 25,000-acre watershed of Redfield Creek, the ranch takes in all of the perennial stretches and most of the watersheds of both Bass and Hot Springs Creeks. The streams' waters harbor five species of increasingly rare native fish. One, the Gila chub (*Gila intermedia*), is currently under review for federal listing as a threatened or endangered species. All three creeks also support some of the Southwest's most extensive stream-corridor gallery forests, which, in turn, host a number of rare plants and riparian-related plant communities. In short, the Muleshoe is recognized by those who know it as quite beyond the ordinary.

In 1982, the Conservancy launched a $1.6 million fund-raising campaign to purchase the Muleshoe Ranch. At closing, what we bought was 6,160 acres of land, grazing leases on 23,520 acres owned by the state and on 3,039 acres owned by the Bureau of Land Management (BLM), as well as a 22,091-acre U.S. Forest Service grazing allotment within the Galiuro Wilderness Area. The acreage we acquired full title to is scattered throughout the public land on which we hold the grazing leases.

In effect, we had purchased a very expensive preserve, 88 percent of which is owned by someone else. Was the Conservancy's reputation for putting together intelligent, heads-up real-estate deals open to question? The answer, of course, is no. Moreover, the subsequent evolution of the cooperative agreements among the four owners of this magnificent property is one of the premier examples of the successful management partnerships that are possible between the Conservancy and the stewards of our public lands.

We learned, very quickly, that three conflicting facts related to the grazing leases were going to cause us some management problems. First, the leases we had purchased pretty much mandated that we would be forced to graze in order to retain management interest in the land. Second, it was very questionable whether a grazing operation on the preserve could, at the very least, break even. And, third, the riparian corridors of the southwestern deserts are extremely fragile and highly susceptible to damage from foraging animals. Since nearly all of the highest-ranked natural elements on the property are dependent on the riparian areas, this problem was of extreme importance to us.

It was the economics, as much as anything else, that crystallized our concerns. At the Conservancy's 54,000-acre Niobrara Valley Preserve in Nebraska, for example, one grazing animal is sustained on about 2.5 acres; at our Samuel H. Ordway, Jr., Memorial Prairie in South Dakota, it takes about 1.25 acres. On the Muleshoe, at very liberal stocking rates, the same animal would need more than 110 acres. Further considerations: the country is extraordinarily rugged, has essentially no internal roads within more than 80 square miles, and would need a gargantuan fencing effort to protect the riparian areas from trampling and concentrated grazing. We felt that the only reasonable and responsible course of action was to approach the public agencies with our interests and attempt to work out a series of agreements that would protect the

property, fit within the regulatory statutes of each agency, and allow the Conservancy to maintain its management interests.

Our initial worries were focused on the 22,091-acre Forest Service grazing allotment in the spectacular and rugged Galiuro Wilderness Area. This allotment embraces the Redfield Creek watershed, provides the water that supports a thriving population of Gila chub, and is home to a healthy, expanding herd of desert bighorns.

In the spring of 1985, five Forest Service people from the Coronado National Forest (along with a state Game and Fish habitat biologist) joined two Conservancy staff members to spend a week on horseback exploring the canyons and uplands of the Redfield allotment. Thanks to that trip, we achieved a close working relationship among our organizations and reached a mutual understanding of our respective objectives. In addition, we were pleasantly surprised to discover that retiring the grazing lease on this particular portion of the Galiuro Wilderness was in the best interests of both the Conservancy and the Forest Service. The Conservancy now retains a cooperative management interest in the property without the capital outlay and stewardship problems of gearing up for a difficult and marginal cattle operation. Meanwhile, the Forest Service saves substantially on administrative costs and can concentrate its resources on protecting the wilderness, wildlife, and habitat values of the allotment.

Working out a similar arrangement with the State of Arizona on its 23,520-acre piece within the preserve boundaries was much more difficult. The complications here were not caused by any lack of cooperation on the agency's part. Put simply, state-owned lands in Arizona are the revenue source for the School Trust Fund, and the State Land Department is bound, by law, to maximize the production of these revenues. As a result, the options were extremely limited. The lands had to be grazed and payment of a full-use grazing fee was legally mandated. Considering our protection objectives for Muleshoe Ranch, this was not a good situation for the state or for the Conservancy. Enter the Bureau of Land Management and a unique land trade.

While eating a brown-bag lunch on a sand dune near the San Simon River, in April 1985, I had a brief talk with the state director of the BLM here in Arizona. He mentioned his agency's interest in swapping lands with the state in order to consolidate scattered ownerships and to secure lands with high wildlife and habitat resource values. Given the predicament we were facing on how to best manage our state-leased holdings, his words did not go unnoticed. On April 18, 1986, following a series of meetings and discussions, the Muleshoe's 23,520 acres of state land became the property of the Bureau of Land Management.

Both BLM and the Arizona State Land Department were aware that the lands lying within the boundaries of the Muleshoe Ranch Preserve are uncommon, regardless of ownership. Both agencies were extremely cooperative throughout the exchange process, recognizing that the "multiple-use flexibility" held by BLM under the Federal Land Policy and Management Act (FLPMA) would allow for management options that would meet the goals of all involved. The management agreements that will evolve over the next few months will concentrate on the preserve's wilderness and wildlife resources, on its watersheds and significant riparian corridors, on its endangered species and other high-ranking elements, as well as on its research importance and potential use for environmental education programs.

With 86 percent of Arizona lands in public ownership, this first major foray into the somewhat untested waters of joint management has been not only greatly gratifying but also extremely encouraging. Our government colleagues in the public lands arena have made the Muleshoe Ranch Preserve "experiment" an immensely successful one.

Jointly owned by The Nature Conservancy, the Bureau of Land Management, and the U.S. Forest Service, this particular preserve occupies an unusual niche among Conservancy holdings. Our Public Lands Protection Program must, to accomplish its objectives, operate on many fronts, in a variety of ways. The spirit of cooperation that has been the hallmark of the Muleshoe project from the beginning cannot, of course, serve as a simple template for future efforts elsewhere. It does, nonetheless, serve as a model that illuminates the possibilities inherent in this spirit and in the partnerships that can result.

MILE HI COTTAGES AVAILABLE

Modern housekeeping cottages overlooking a mountain creek are available for rental year-round at the Conservancy's Mile Hi/Ramsey Canyon Preserve. Located 90 miles southeast of Tucson in the Huachuca Mountains, the Mile Hi stretches across the mouth of Ramsey Canyon, one of the most beautiful and biologically diverse canyons in southern Arizona.

To arrange a visit or obtain a brochure and bird list, write: Mile Hi/Ramsey Canyon Preserve, RR 1, Box 84E, Hereford, Arizona 85615. Phone: (602) 378-2785.

Note: Beginning October 1, 1986, advance phone reservations will be needed for daytime visits on Saturdays, Sundays, and federal holidays. Visitor hours are 8 a.m. to 5 p.m.

NEW PROJECTS

CALIFORNIA

Boggs Lake—Addition—(Lake County). A 42-acre purchase safeguards three globally rare plants—*Orcuttia tenuis* and *Gratiola heterosepala* (both imperiled) and *Navarretia plieantha* (critically endangered)—and expands protection of this large volcanic vernal pool (a nationally endangered community) to 143 acres. A project of the Wild California Campaign, the preserve is managed by the California Field Office.

Eagle Point (San Bernardino County). Nestled in Big Bear Valley, this wet meadow harbors two plants under review for federal protection, San Bernardino bluegrass (*Poa atropurpurea*) and California dandelion (*Taraxacum californicum*), and a third that's federally listed as endangered—pedate checker-mallow (*Sidalcea pedata*). All three are found only in the valley, which may support some 30 endemic plant species. The one-and-a-half-acre parcel is managed by the California land steward.

Lanphere-Christensen Dunes—Addition—(Humboldt County). Stretching along the Pacific coastline, the jewel of a recent 130-acre purchase belies its mundane-sounding name, "northern foredune grassland." It is a globally endangered plant community. Jointly managed by Humboldt State University and a Conservancy land steward, the entire 341-acre preserve also supports fine examples of three other rare or threatened community types: northern dune scrub, beach pine forest, and northern coastal salt marsh. The latter community hosts two endemic plant species critically imperiled in the state—Humboldt Bay owl's clover and Humboldt Bay gum plant.

ILLINOIS

Lower Cache River Preserve—Addition— (Pulaski County). A mazy expanse of swamps and sloughs with stands of huge bald cypress trees (many over 1,000 years old) and tupelos, this refuge embraces a six-mile stretch of the Lower Cache River. The sanctuary also claims a "national record tree"—the largest water locust in the U.S.—and 13 other trees that hold state records for their great size. And there's more: three plant species listed as endangered in Illinois. A 44-acre purchase brings the preserve to 512 acres. Recommended for protection by the Illinois Natural Areas Inventory, holdings along the Lower Cache were acquired through the National Critical Areas Conservation Program and are managed by a Conservancy land steward.

INDIANA

Brock Sampson Ridge (Floyd County). A 355-acre purchase begins protection for a siltstone glade community (endangered in the state) and a chestnut oak-Virginia pine upland forest (rare in Indiana). The forest shelters two plants that are rare in the state—mountain laurel (*Kalmia latifolia*) and rattlesnake weed (*Hieracium venosum*). An Indiana Natural Heritage Protection Campaign project, the parcel will be transferred to the Indiana Department of Natural Resources.

Hoosier Prairie—Addition—(Lake County). A high quality tract of native grassland and a national natural landmark, Hoosier Prairie boasts a black oak sand savanna—a natural community threatened in the state—and many uncommon plants, including northern cranesbill and prairie parsley (both endangered in Indiana). Acquired through the Indiana Natural Heritage Protection Campaign, the 104-acre parcel brings protected acreage to 439. The state's Department of Natural Resources manages the site.

KENTUCKY

Swan Lake Wildlife Management Area—Addition—(Ballard County). The largest natural body of water in the state, Swan Lake was named by John Audubon, and the trumpeter swans he saw there provided inspiration for several of his paintings. A cooperative effort with the Kentucky Fish and Wildlife Resources Department protects 2,474 acres of cypress-tupelo swamp, including Swan Lake and all or part of ten other lakes. The department, which manages the preserve (recently enlarged by the 1,374-acre purchase), has identified more than 23 rare species here.

MICHIGAN

Piney Ridge—Addition—(Mason County). One of the nation's best examples of freshwater interdunal wetlands and open dunes, the Big Sable Dunes region harbors a thriving population of pitcher's thistle (*Cirsium pitcheri*)—a candidate for federal listing—and sand cancer root (*Orobanche fasciculata*), threatened in the state. Lying within Big Sable Dunes, the 16-acre Piney Ridge tract,

which includes this one-and-a-half-acre gift of Leona Nankee, is managed by the Michigan Department of Natural Resources as part of Ludington State Park.

MINNESOTA

Lac Qui Parle—Addition—(Lac Qui Parle County). The Conservancy has purchased another 40-acre parcel of the fine mesic blacksoil prairie surrounding Lac Qui Parle (actually a widening in the Minnesota River). Dotted with numerous potholes, the 1,727-acre complex provides a refuge for nesting and migrating waterfowl of the Central Flyway. With adjacent state land, it protects a full continuum of habitats—from upland prairie to "lake" shore—on these rocky terraces of the Minnesota River Valley. Safeguarded through the Northern Prairie Wetlands component of the National Wetlands Conservation Project and the National Critical Areas Conservation Program, the new tract will be transferred to the Minnesota Department of Natural Resources.

Tyler Slough (Lincoln County). In a joint effort with the Minnesota Department of Natural Resources (DNR), the Conservancy purchased 288 acres (in four tracts) of potential breeding habitat for a variety of waterfowl, including mallards, blue-winged teal, redheads, and Canada geese. Many other species are expected to use the area during migration. Protected through the National Wetlands Conservation Project, the property will be managed by DNR.

MISSOURI

Prairie State Park—Addition—(Barton County). Since the late '70s, the Conservancy has assisted the state in saving the prime grasslands in this park—seven distinct natural communities, ranging from wet depressions and stream margins to dry shale prairie and sandstone outcrops. The rolling terrain is habitat for greater prairie chickens and upland sandpipers (both rare in Missouri), as well as northern harriers (endangered in the state). With this 318-acre acquisition, our preservation achievement here totals 2,878 acres. The Missouri Department of Natural Resources manages the park.

MONTANA

Pine Butte Swamp—Addition—(Teton County). Each spring, the grizzlies descend from their mountain retreats and follow the water courses down to Pine Butte's swamps, there to feed and raise their young. The bears (threatened in the lower 48) join a plethora of other species that make this preserve a wildlife bonanza: golden eagle, sandhill crane, lynx, bobcat, cougar, gray wolf, moose, mountain goat, bighorn sheep, elk.... A 400-acre purchase brings Conservancy holdings here to 14,253 acres. The refuge, which takes in all of 500-foot-high Pine Butte and a diversity of natural communities, is managed by the Montana/Wyoming Field Office. It is a project of the Conservancy's National Critical Areas Conservation Program.

NEW YORK

Dwarf Pine Barrens—Additions—(Suffolk County). Donations of two tracts totaling one-tenth of an acre from Abraham E. Abrahamson and one-half acre from Horace J. Conyers expand protection to more than 600 acres. Managed by Suffolk County and the Conservancy's Long Island Chapter, the preserve features part of New York's healthiest and largest contiguous dwarf pine barrens. This endangered natural community (one of three such sites in the world) is habitat for threatened northern harriers and rare breeding buck moths.

NORTH CAROLINA

Bluff Mountain Preserve—Addition—(Ashe County). One of the most significant sites in the southern Blue Ridge, Bluff Mountain harbors an unusually large concentration of "special status" plants, including one critically endangered endemic species (Bluff Mountain reindeer lichen), three candidates for federal listing, one endangered in the state, and four threatened in the state. The preserve also boasts ten natural communities, two of which—mafic bedrock glade and Southern Appalachian fen—are imperiled in the state. The North Carolina Chapter manages the 896-acre preserve, including this 138-acre purchase.

PENNSYLVANIA

Bristol Marsh (Bucks County). A management agreement with the Borough of Bristol on 11 acres—the first tract of a projected larger assemblage—begins protection for a freshwater intertidal marsh (critically endangered in the state) that supports *Sagittaria calycina* (also critically endangered in the state), *Sagittaria subulata, Bidens bidentoides,* and *Echinochloa walteri* (the latter three imperiled in the state). The Eastern Pennsylvania Chapter manages the area in cooperation with the Borough of Bristol.

TEXAS

Clymer Meadow (Hunt County). Less than one-tenth of one percent of the original blackland prairies remain intact. Clymer Meadow is an excellent example of what was once the most common blackland community: little bluestem-Indian grass

T.N. Cline, M.D./Photair, Inc.

Mink River Estuary

While virtually all of our Great Lakes estuaries have been destroyed, that of the Mink River is an exception. Lying almost at the tip of Wisconsin's slender Door Peninsula, which juts northward into Lake Michigan, this estuary is one of only two in the Great Lakes that have been proposed for inclusion in the national estuarine sanctuary system.

The Conservancy has purchased another 40 acres, bringing its protection of the estuary and the Mink River's watershed to 721 acres. The preserve takes in portions of the river's spring-fed headwaters as well as parts of some 12 different natural communities, four of which are endangered, threatened, or rare in the state: northern sedge meadow, springs and spring runs, white cedar swamp, and Great Lakes beach. Two plant species under review for federal protection—dune thistle (*Cirsium pitcheri*) and dwarf lake iris (*Iris lacustris*)—also grow within the sanctuary's boundaries.

Stewardship goals for the site include limiting the impact of introduced fish species on naturally occurring species. The Conservancy also is sponsoring a research project (funded in part by the Wisconsin Academy of Sciences, Arts, and Letters) through the University of Wisconsin Center for Great Lakes Studies to learn more about the food chain as it affects larval forms of Lake Michigan fish species such as smallmouth bass, bloaters, whitefish, perch, and northern pike. A project of the National Critical Areas Conservation Program, the Mink River Estuary is managed by the stewardship committee of the Wisconsin Chapter.

(now critically endangered). One of the most unusual features here is the micro-topography, called hogwallows or gilgai, that result from repeated shrinking and swelling of the clay. These tiny depressions, scattered throughout the site, host a second prairie community—the imperiled gamma-grass/switch grass. A 113-acre purchase, managed by the Texas Field Office, begins protection for this remarkable spot.

VERMONT

Green Mountain National Forest—Addition—(Windham County). Including a 12,000-acre addition, purchased in a joint effort with the U.S. Forest Service, Conservancy-protected acreage sprawls across some 18,000 acres of mostly wooded land—habitat for bear, raccoon, and porcupine. The tract will be transferred to the Forest Service for inclusion in Green Mountain National Forest.

Hunger Mountain Preserve—Addition—(Washington County). Through its Vermont Critical Areas Program, the Conservancy—in cooperation with the Vermont Department of Forests, Parks, and Recreation—purchased a 124-acre parcel on Hunger Mountain. Near the summit is a fine, relatively undisturbed example of a New England high-elevation spruce-fir forest (threatened in the state). Managed by the department, the 476-acre preserve safeguards a popular hiking area as well as the rare arctic/alpine Bigelow's sedge (*Carex bigelowii*) in one of only three known populations in Vermont.

Willoughby Falls (Orleans County). The state Fish and Wildlife Department already owned the adjacent land, but the most desired tract—three acres embracing a sparkling waterfall—remained out of reach until Conservancy efforts helped bring it under protection. The department now owns and manages this scenic area in northeastern Vermont.

WEST VIRGINIA

Morgan Woods (Morgan County). Here, a flourishing population of harperella (*Ptilimnium fluviatile*), endangered throughout its range, grows on the banks of the Cacapon River. And on the hillside lies a globally threatened shale barren community. A 55-acre donation of Morgan Woods, Inc., in two tracts (one an outright gift and the other a conservation easement), is managed by the West Virginia Chapter.

WISCONSIN

Baraboo Hills Project/Baxter's Hollow: R. D. and Linda Peters Nature Preserve—Additions—(Sauk County). Otter Creek in the Baraboo Hills is a cold-water trout stream used extensively for aquatic invertebrate research. The purchase of 40 acres enhances protection for Otter Creek's watershed—the only undeveloped one in southern Wisconsin—and for a set of essential springs. Now spread over 2,657 acres, the sanctuary is managed by the Conservancy's Wisconsin Chapter.

Chiwaukee Prairie—Additions—(Kenosha County). The acquisition of two lots totaling two acres brings Conservancy holdings on this outstanding stretch of wet-mesic prairie to just under 148 acres. A national natural landmark and a state scientific area, Chiwaukee harbors more than 400 native plant species, including at least 15 that are rare, threatened, or endangered. The preserve, which embraces a series of ridges and swales on the Lake Michigan coast, is currently managed by the University of Wisconsin, Parkside, with assistance from the Conservancy's Wisconsin Chapter and the state's Scientific Areas Program.

CORRECTION

In the April/May 1986 *News* (Annual Report 1985), Aetna Mountain Slopes in Tennessee was incorrectly listed as a separate project. A 1,100-acre gift of Bowater, Inc., the site is actually an addition to the Conservancy's Tennessee River Gorge project—a vast assemblage now totaling 15,625 acres. Managed by a professional Conservancy land steward, the gorge hosts a variety of uncommon plant communities and numerous rare species.

TAX REFORM ALERT

Maximize Tax Benefits from Life Income Gifts NOW

Life income gifts allow you to contribute appreciated securities or real estate to The Nature Conservancy and receive (or provide to others) a lifetime income in return. You can substantially increase your annual income from low-yielding assets while taking advantage of these tax benefits:

- The life income arrangement can sell appreciated assets—without a penny of capital gains tax—and reinvest full proceeds for a high yield.
- You receive an income tax deduction the year the gift is made. This deduction provides a savings in tax dollars, and monies saved can be invested for additional annual income.

Because of pending tax law changes, it is probable that your income tax deduction associated with a life income gift will save you more tax dollars before December 31 than after that date. While such gifts will still be highly beneficial after tax reform, we would like to help you explore the tax ramifications of a life income gift of appreciated securities or real estate when the tax deduction will do you the most good.

Personal proposals can be prepared for gifts of appreciated securities valued at $5,000 or more, or for gifts of appreciated real estate valued at $60,000 or more.

Life income arrangement donors are named honorary life members of the Conservancy in appreciation of their support.

For more information, please contact: Alice A. Pinsley, Director, Planned Giving Program, The Nature Conservancy, 294 Washington Street, Room 749, Boston, MA 02108; phone: (617)338-2103.

PHOTOGRAPHY WORKSHOP

On the weekend of October 17-19, 1986, a nature and wildlife photography workshop will be held at the Virginia Coast Reserve. Both amateur and professional photographers are invited to learn techniques of nature photography through lectures, slide shows, and field trips to the barrier islands. For more information about this workshop and other fall natural history programs, write: John M. Hall, Virginia Coast Reserve, Brownsville, Nassawadox, VA 23413; or call (804) 442-3049.

MONTANA SKI TRIPS

The Montana/Wyoming Field Office is offering five-day cross country skiing trips from December 1 of this year to March 31, 1987. Based out of a ranch on the East Front of the Rockies, we will take day trips to various scenic locations. The East Front is a major big-game wintering area and offers spectacular winter vistas. The skiing is not strenuous, and the food is hot and hearty. For details, contact Benjamin Pierce at the Montana/Wyoming Field Office (see back cover for address).

Special Membership Meeting

The Chairman of the Board of Governors has called a special meeting of the membership of The Nature Conservancy to be held on Saturday, December 6, 1986, at 10 a.m. at the Sheraton Crystal City Hotel in Arlington, Virginia. (The meeting is being held there to coincide with a meeting of the national Board of Governors). The purpose of the meeting is to vote on a bylaws change proposed by the board.

At its meeting on June 14, 1986, the Board of Governors recommended a change in the fiscal year from December 31 to June 30. This change will permit the Conservancy to bring its year to a close during the least busy season. It also will allow us to avoid closing the books during our major fundraising campaigns, to coordinate programs with the states (state governments generally have a June fiscal year), and to increase accounting efficiencies and reduce operating costs.

Proposed Bylaws Change
Article IX, Section 1, amended to read as follows: "**Fiscal Year.** The fiscal year for all business transactions of the Conservancy shall be from July 1 through June 30 of the following year."

SPRING TOUR OF COSTA RICA

Biologists John and Barbara Hopper will lead a natural history tour of Costa Rica from February 10 to March 1, 1987. The tour will explore many of the country's national parks, including Tortuguero, Palo Verde, Corcovado, and Santa Rosa. The reservation deadline is November 15, 1986, and space is limited to 16. The price of the tour will include a $150 tax-deductible contribution to the Conservancy's Costa Rica program. For more information contact John and Barbara Hopper at P.O. Box 783, Kenwood, California 95452. Phone: (707) 833-2078 or toll-free 1-800-624-6633.

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The Katharine Ordway Associates program was established to recognize those individuals who—with a minimum annual gift of $1,000 to the General Fund—play a leadership role in supporting the national operations of The Nature Conservancy.

We are proud to indicate in bold type those members who have given a minimum of $1,000 to the national General Fund for five or more consecutive years.

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